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# Clinical and Pathological Observations of Reactional Cases of Leprosy in Thailand

by

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Although leprosy is rather a chronic disease and evolves its symptoms very slowly, there are certain phases of this disease in which it shows varieties of acute symptoms. These acute phases of leprosy are usually called "lepra reaction" or "reactional phases" of leprosy.

During the period ranging from November 11, 1964 to February 11, 1965, we had an opportunity of studying such reactional phases of leprosy in Prapradaeng Leprosarium and Khon Kaen Leprosarium of Thailand, in a joint study on the clinical pathology of leprosy.

In this paper we intend to report on the clinical and histopathological features of reactional cases of leprosy which we have observed in the present study, and to discuss the racial differences of the symptoms of leprosy we have noticed during our observations.

## MATERIALS AND METHOD

With the kindly cooperation of the patients and the staffs of the leprosaria, we were allowed to make 64 biopsies in these two Government Leprosaria. Among these 64 biopsy specimens, 24 were from reactional cases of various types of leprosy. The reactional phases of leprosy we have studied in the present joint work are classified as follows:

- a) Erythema nodosum leprosum (ENL)  
Cases No. 2, 4, 5, 7, 12, 13, 16, 17, 18, 20, 23, 24 and 25.
- b) Erythema multiform Case No. 22.
- c) Erythema nodosum necroticans Cases No. 8 and 26.
- d) Reactional tuberculoid Cases No. 14, 15 and 19.
- e) Tuberculoid in reaction Case No. 1.

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- f) Borderline Cases No. 3 and 6.
- g) Lepromatous exacerbation Case No. 21.
- h) DDS dermatitis Case No. 27.

As we planned in the beginning of our work to do the histopathological and electron microscopic examinations of the materials, the biopsy specimens were fixed in 6 % glutar aldehyde buffered with s-collidine. After 3 hours of fixation, the specimens were transferred to s-collidine and kept in refrigerator. Both paraffin blocks for histopathology and plastic blocks for electron microscopy were made from these glutar-aldehyde-fixed specimens.

Although glutar aldehyde is a fixative which can be used both for light and electron microscopy, the condition for keeping the biopsy materials in this study was not optimum. As a result of this unfavourable condition, specimens for electron microscopy were found to be inadequate for ultra-structural study because of gross artifacts produced during fixation. Also s-collidine buffer in which specimens were kept after fixed in glutar aldehyde seemed to damage the acid-fastness of leprosy bacillus, and because of this, the evaluation of the grade of bacillary disintegration in reactional tissues became a little difficult in this study.

From the above reasons, the descriptions in this study are chiefly based on histopathological findings of paraffin sections prepared from glutar-aldehyde-fixed materials although they were not ideal for this kind of study. Better method of fixation which is applicable both to light and electron microscopy is still to be worked out for the field studies in tropic countries where refrigerators are sometimes not easily available.

## CASE REPORT

### A. Erythema Nodosum Leprosum

#### Case No. 2

Age: 30 Sex: Male Nationality: Thai

Race: Thai Religion: Buddhist Type: Lepromatous with ENL

*History*: He is a case of 3 years duration. The first lesions appeared as maculo-anesthetic type on the back and face, accompanied with numbness on upper extremities. Plantar ulcer and hand edema. Fever. History of syphilis was found.

*Reactional stage*: On January 1964, he was admitted. 8 months later, lesions became elevated, reddish and edematous, accompanied with fever. DDS was discontinued since that time, and INH has been tried 300 mg/day.

*Treatment*: During 4 months after admission Ciba 1906 of 500 mg/day was given and then he went home for ambulatory treatment. By some misunderstanding he took himself 12 tablets of Ciba 1906 a day, and reaction occurred because of

this. He was hospitalized again.

*Laboratory finding:* Bacterial index: 4.0; Hb: 11.2 gm%; R. B. C. 3.72 million cells/cu. mm.; W. B. C. 13850 cells/cu. mm.; Diff. count: N 55 %, L 42 %, E 3 %; Urine: Sp. Gr. 1.009, Sugar +1, Epithelial cells few; Feces: nil; Others, nil.

*Histopathology finding:* No biopsy.

**Case No. 4.**

Age: 23      Sex: Male      Nationality: Thai

Race: Chinese      Religion: Buddhist      Type: Lepromatous with ENL.

*History:* He is a case of 8 years duration. First lesion on the left leg was maculo-anesthetic and then erythematous lesions appeared all over the body. Some fingers were distinctly anesthetic and edematous. He was admitted on February 5, 1963.

*Skin lesion:* One month after the treatment with DDS was introduced, reaction started and lesions became reddish, accompanied with headache and fever. DDS discontinued.

*Treatment:* INH during reaction 300 mg/day. Rather regular treatment.

*Laboratory finding:* Bacterial index 3.7; Hb 9.4 gm%; R.B.C. 3.8 million cells/cu. mm.; W.B.C. 12100 cells/cu. mm.; Diff. Count: N 64%, L 36%; Urine: Sp. Gr. 1.610, Epithelial cells very few; Feces: nil; Others: nil.

*Histopathology finding:* Here and there in the corium big globi with amorphous pale blue mass inside (giant globi). Slight degree of cell infiltration composed of monocytes, eosinophiles. A finding suggesting of giant cell formation around giant globus can be seen. Bacilli in giant globi and also in lepromatous lesions.

**Case No. 5**

Age: 32      Sex: Male      Nationality: Thai

Race: Thai      Religion: Buddhist      Type: Lepromatous with ENL

*History:* He has been suffering from leprosy for 7 years, and has been treated with DDS for 6 years. First lesion on the face was erythematous and anesthetic. Also some maculo-anesthetic lesions on the back. Both ulnar nerves were enlarged. He was admitted on October 19, 1964.

*Skin lesion:* Finger-tip sized ENL on scapular region. Lepromatous macule on left upper-arm.

*Reactional stage:* Before admission no erythema. He got fever and plantar ulcer 1 month after the admission.

*Treatment:* Regular treatment for 6 years with DDS.

*Laboratory finding:* Bacterial index 2.1; Hb 11.8 gm%; R.B.C. 4.55 million cells/cu. mm.; W.B.C. 6500 cells/cu. mm.; Diff. Count: N 64%, L 35%; Urine: Sp. Gr. 1.017, Sugar +2, Hyaline and granular casts few; Feces: nil; Others: nil.

*Histopathology finding:* Lepromatous changes in perivascular, periglandular and

peri-follicular arrangement. Giant globi are present. Also intra-focal round cell infiltration in lepromatous lesions. Giant cells around giant globi present. Giant cell formation by nuclear division without cell division and also by coalescence of epithelioid cells are both visible in this slide. No serious damage of the nerve in the skin. Inside globi acidfast bacilli are seen.

**Case. No. 7**

Age: 26 Sex: Female Nationality: Thai

Race: Thai Religion: Buddhist Type: Lepromatous with ENL

*History*: She has been suffering from leprosy for 2 years. No treatment before admission. First lesion appeared on the left arm, nodular and anesthetic, and then erythematous lesions followed which spread to all over the body. Intrinsic muscles of the hand atrophied, and foot drop.

*Skin lesions*: ENL on the left forearm.

*Reactional stage*: About 5 months ago she got reaction, and malaise accompanied with fever. The reaction comes and goes from time to time. No treatment with DDS before.

*Treatment*: Treatment with INH 300 mg/day. No treatment with DDS before.

*Laboratory finding*: Bacterial index: 4.0; Hb 7.4 gm%; R. B. C. 4.10 million cells/cu. mm.; W. B. C. 10520 cells/cu. mm.; Diff. Count: N 63%, L 36%, E 1%; Urine: Sp. Gr. 1.015, Sugar + 1, Epithelial cells few; Feces: nil.

*Histopathology*: Perivascular and peri-glandular lepromatous foci with giant globi. Polymorpho-nuclear cell infiltration in lepromatous foci.

**Case No. 12**

Age: 32 Sex: Male Nationality: Thai

Race: Chinese Religion: Buddhist Type: Nodular lepromatous

*History*: 12 years duration of the disease. He was admitted on March 1963. Before his admission no DDS treatment. First symptom started as anesthesia on right foot. Later nodular lesions appeared on face. Eruptions were reddish and nodular with well defined edges. Claw hand. No history of household contact.

*Skin lesion*: Nodular lepromatous.

*Reactional stage*: He got reaction during his admission, but the treatment was continued with usual dosage of specific treatment.

*Treatment*: DDS 600 mg per week for 12 years. Regular treatment.

*Laboratory finding*: Bacterial index: 2.6; Hb 9.8 gm%; R. B. C. 3.85 million cells/cu. mm.; W. B. C. 9450 cells/cu. mm.; Diff. Count: N 65%, L 35%; Urine: Sp. Gr. 1.007, Epithelial cells few, Casts hyaline few, others nil; Feces: nil.

*Histopathology finding*: Here and there foamy tissues. Round cell infiltration and fibrin impregnation are distinct. Because of the improper fixation, the bacilli

has lost acid fastness.

**Case No. 13** (Photo. 1)

Age: 14    Sex: Female    Nationality: Thai

Race: Thai    Religion: Buddhist    Type: Lepromatous

*History:* She has been suffering from these conditions for 6 years. At first, it appeared as macular hypopigmented lesion on left buttock. Later on it changed to nodular form with ill defined edges.

*Skin lesion:* Old lepromatous.

*Reactional stage:* Since April 1964, reaction started, malaise accompanied with fever. The reaction comes and goes from time to time.

*Treatment:* No treatment before admission. DDS has been given 100 mg/day, but irregular because of reaction.

*Laboratory finding:* Bacterial index: 3.3; Hb 8.0 gm%; R. B. C. 3.53 million cells/cu. mm.; W. B. C. 12850 cells/cu. mm.; Diff. Count: N 62%, L 38%, Urine: Sp. Gr. 1.009, Hyaline casts few, others nil.

*Histopathology finding:* Peri-vascular, peri-glandular and peri-follicular lepromatous foci. Lepromatous lesion are chiefly composed of vacuolated lepra cells with very few cell infiltration. Acid-fast bacilli can be found in lepromatous foci.

**Case No. 16**

Age: 24    Sex: Male    Nationality: Thai

Race: Thai    Religion: Buddhist    Type: Lepromatous with ENL.

*History:* History of leprosy for 5 years. Hyperpigmented elevated lesion, not anesthetic. DDS has been given for three years before admission.

*Skin lesion:* 2 years before the admission, after taking alcoholic drink, lesions appeared on face with pain and mild fever.

*Treatment:* DDS 100 mg/day for 3 years, even after reaction.

*Laboratory finding:* Bacterial index: 2.50; Hb. 11.0 gm%; R.B.C. 3.89 million/cu. mm.; W. B. C. 4270 cells/cu. mm.; Diff. Count: N 66%, L 34%.

*Histopathology finding:* Subepidermal layer free from cells is rather broad. Huge mass of leproma occupies the whole corium. The leproma is composed of vacuolated foamy cells. Here and there round cell infiltration can be found in upper layer of the corium. Bacilli positive.

**Case No. 17**

Age: 24    Sex: Male    Nationality: Thai

Race: Thai    Religion: Buddhist    Type: Macular lepromatous with ENL

*History:* History of leprosy for 5 years. Macular lesion on left shoulder, anesthetic, increased in size and expanded to forearm. After admission, he was treated with

DDS. Hyperpigmented purplish plaque with ill-defined edge appeared on face. Slight anesthesia on face.

*Skin lesion*: 5 months ago, reactional stage started, accompanied with fever and exacerbation of lesions.

*Treatment*: DDS injection 2.5 cc (60 mg DDS suspension) every 2 weeks.

*Laboratory finding*: Bacterial index: 2.88; Hb. 12.4 gm%; R.B.C. 5.11 million cells/cu. mm.; W.B.C. 5650 cells/cu. mm.; Diff. Count: N 65%, L 35%.

*Histopathology finding*: Lepromatous lesions chiefly composed of vacuolated lepra cells are found around blood vessels in the reticular layer, sweat gland and hair-follicles. Infiltrating cells are few in lepromatous foci. Foamy structure with bacilli inside.

#### Case No. 18

Age: 31 Sex: Male Nationality: Thai

Race: Thai Religion: Buddhist Type: Lepromatous with ENL.

*History*: History of leprosy for 5 years. First lesion appeared as hypopigmented macular lesion of small size (1cm in diameter) on the buttock. He neglected and ignored this lesion. Since that time slight malaise, and no treatment until 4 years after he noticed the initial lesion.

*Skin lesion*: Since one year ago, around the time when DDS treatment was started, reactional lesion of ENL occurred repeatedly on the trunk, face and extremities with fever, insomnia and malaise.

*Treatment*: DDS treatment.

*Laboratory finding*: Bacterial index: 2.0; Hb 12.6 gm%; R. B. C. 4.25 million cells/cu. mm.; W.B.C. 5350 cells/cu. mm.; Diff. Count: N 67%, L 55%.

*Histopathology finding*: Lepromatous foci in reticular layer of the corium. Around a sweat duct, round cell infiltration is distinct. Bacilli inside foamy cell, but not so well stained.

#### Case No. 20

Age: 37 Sex: Male Nationality: Thai

Race: Thai Religion: Buddhist Type: Nodular lepromatous with ENL

*History*: History of leprosy for 15 years. It appeared on hand as hyperpigmented anesthetic lesion, and the disease evolved itself very slowly until 3 years ago with manifestation of nodular lesions on face and all over the body.

*Skin lesion*: Large nodules of about 8-10 mm diameter.

*Reactional stage*: One week ago, acute lesions have occurred with fever. ENL lesions painful.

*Treatment*: DDS treatment for 2 years.

*Laboratory finding*: Bacterial index: 1.37; Hb. 13.0 gm%; R. B. C. 5.46 million/cu.

mm. ; W. B. C. 4900 cells/cu. mm. ; Diff. Count : N 63%, L 37%.

*Histopathology finding*: Many giant cells are seen in lepromatous foci of the corium. Most of the giant cells are formed around giant globi.

**Case No. 23** (Photo 2)

Age: 40      Sex: Female      Nationality: Thai

Religion: Buddhist      Type: ENL in old lepromatous lesions.

*History*: History of macular hypopigmented lesions on thighs and arms for 15 years. Area of anhydrosis and anesthesia expand slowly on thigh and body trunk.

*Skin lesion*: Since 2 years ago, she has been taking DDS tablets from leprosy mobile clinic. Nodular lesions (of ENL) come and go from time to time. Painful and itchy.

*Treatment*: DDS 100 mg/day for 1 year.

DDS 2.5 cc intra muscular (60 mg DDS suspension).

*Laboratory finding*: Bacterial index 2.37; Hb 11.0 gm%; R.B.C. 4.94 million cells/cu. mm.; W.B.C. 3940 cells/cu. mm.; Diff. Count: N 65%, L 34%, E 1%.

*Histopathology finding*: Round cell infiltration in lepromatous foci of deep corium. Also many fat drops can be seen in lepromatous foci. In reticular layer of the corium only slight lepromatous change can be seen.

**Case No. 24**

Age: 30      Sex: Female      Nationality: Thai

Race: Thai      Religion: Buddhist      Type: Lepromatous with ENL

*History*: History of leprosy for 4 years. Macular lesion on face with reddish border and anesthesia. Onset with fever. No history of household contact. It comes and goes from time to time.

*Skin lesion*: ENL on left upper arm.

*Reactional stage*: Reactions of ENL occurred 4 times within this year. Present lesion started 4 days ago, after regular dose of DDS. Nodules on body trunk and arms.

*Treatment*: DDS 100 mg per day for 2 years.

*Laboratory finding*: Bacterial index 1.0; Hb. 10.8 gm %; R. B. C. 4.12 million/cu. mm.; W.B.C. 5620 cells/cu. mm.; Diff. Count: N 60%, L 40%.

*Histopathology finding* Round cell infiltration in the lepromatous foci of the corium. Epithelioid cell can not be found. Capillaries of the reticular layer dilated.

**Case No. 25**

Age: 21      Sex: Female      Nationality: Thai

Race: Chinese      Religion: Buddhist      Type: Diffuse lepromatous leprosy with ENL.

*History*: History of macular hypopigmented lesion with reddish border. Diameter of the macule about 7-8 cms. This macule appeared about 8 years ago.

*Skin lesion*: Since 2 years ago, ENL occurred about five times. ENL seems to be related to menstruation. The eruptions are itchy and painful.



*Treatment*: Oral administration of DDS 100 mg/day and sometimes intra-muscular injection of DDS suspension during these 3 years.

*Laboratory finding*: Bacterial index 1.87; Hb 11.8 gm%; R.B.C. 5.42 million cells/cu. mm.; W.B.C. 4240 cells/cu. mm.; Diff. Count: N 69%, L 31%; Others nil.

*Histopathology finding*: Capillaries of papillary and reticular layers of the corium distinctly dilated. Many fat drops in lepromatous foci. No epithelioid and no giant cell. In some places in deep corium, neutrophil leucocytes infiltrate leproma.

## B. Erythema Multiform

### Case No. 22 (Photo 3)

Age: 29    Sex: Male    Nationality: Thai    Race: Thai

Religion: Buddhist    Type: Mild lepra reaction. Erythema multiform.

*History*: Since 15 years ago, he has been suffering from reddish anesthetic lesions (various-sized plaques on buttock). The lesions are also distributed on body trunk and face.

*Skin lesion*: From rice-corn to finger-tip sized papules in follicular arrangement. These papules have a tendency to coalesce with each other.

*Reactional stage*: 3 months ago, an acute reaction occurred with mild fever and abdominal pain, increasing erythema on buttock and thigh.

*Treatment*: DDS 5 years.

*Laboratory finding*: Bacterial index 1.0; Hb 12.8 gm%; R.B.C. 3.85 million cells/cu. mm.; W.B.C. 4200 cells/cu. mm.; Diff. Count: N 64%, L 36%.

*Histopathology finding*: Round cell infiltration in lepromatous foci of reticular layer. Cell infiltration is more prominent near the hair follicles.

## C. Erythema Nodosum Necroticans

### Case No. 8 (Photo 4)

Age: 26    Sex: Female (Miss)    Nationality: Thai    Race: Thai

Religion: Buddhist    Type: Lepromatous with erythema nodosum necroticans.

*History*: She is a case of 3 years duration. No treatment with DDS before. No history of leprosy among his relatives. Admission on May 11, 1964. First lesion appeared as anesthetic erythema on face and also edema of lower extremities. Intrinsic muscles of hands atrophied.

*Skin lesion*: Repeated ulceration of the lesions and afterwards scar formation.

*Reactional stage*: About 7 months before, she got reaction, accompanied with fever. The reaction comes and goes from time to time. No treatment with DDS before.

*Treatment*: Treatment with INH 400 mg/day. No treatment with DDS.

*Laboratory finding*: Bacterial index 0.3; Hb 7.4 gm%; R.B.C. 4.99 million cells/cu.

mm.; W.B.C. 11450 cells/cu. mm.; Diff. Count : N 65%. L 35%; Urine: Sp. Gr-1.00, Others nil; Feces :nil.

*Histopathology finding:* Epidermis extended. No distinct rete ridge. Diffuse cell infiltration in the corium. Infiltrating cells are composed of polymorphonuclear, monocytes and plasma cells. Here and there, micro-abscess can be seen. Whole corium edematous and fibrin impregnation can be seen in many places. The histological picture shows the feature of mild erythema necrotisans.

**Case No. 26** (Photo 5)

Age: 47      Sex: Female      Nationality: Thai

Race: Thai      Religion: Buddhist      Type: Lepromatous with ENL

*History:* She has been suffering from leprosy for 10 years. First lesions on elbow were macular and anesthetic. Five years ago lepra reaction started.

*Skin lesion:* Five years after the commencement of DDS treatment, ENL started to occur and since then it comes and goes from time to time. It is related to DDS treatment. He has been hospitalized for 4 months.

*Treatment:* DDS treatment.

*Laboratory finding:* Bacterial index 2.25; Hb. 8.8 gm%; R.B.C. 4.12 million cells/cu. mm.; W.B.C. 3940 cells/cu. mm.; Diff. Count: N 65%, L 34%, E 1%.

*Histopathology finding:* Cell infiltration in lepromatous foci. Infiltrating cells are chiefly polymorphonuclear.

## **D. Reactional Tuberculoid**

**Case No. 14** (Photo 6 & 7)

Age: 21      Sex: Male      Nationality: Thai

Race: Chinese      Religion: Buddhist      Type: Reactional tuberculoid

*History:* He has been suffering from leprosy for 2 years. Hyperpigmented macular lesion on left thigh, anesthetic, not increase in size. Leprosy mobile clinic gave him a specific treatment.

*Skin lesion:* Elevated erythematous band of 5 cm breadth around the edge of atrophic macular lesion on the right thigh. Inner edge is sharply demarkated but the outer edge fades away and irregular. Outside the erythema there are also many papular lesions of pea-size.

*Reactional stage:* Since one month ago, he has been suffering from reaction with acute onset, fever, pain and malaise. Rash occurred on all over the body (especially on trunk and extremities). Eruptions are of various sizes with purplish colour and sharp border.

*Treatment:* DDS 100 mg every day for 2 years. Stopped DDS because of reaction during hospitalization and symptomatic treatment.

*Laboratory finding:* Bacterial index: 1.12; Hb. 12.0 gm%; R. B. C. 3.81 million cells/cu. mm.; W.B.C. 7350 cells/cu. mm.; Diff. Count: N 70%, L 29%, E 1%.

*Histopathological finding:* Huge giant cells in epithelioid tubercles. Foamy cells can not be seen. From the histopathological finding, this case should be classified as reactional tuberculoid.

**Case No. 15 (Photo 8)**

Age: 30 Sex: Male Nationality: Thai

Race: Thai Religion: Buddhist Type: Reactional tuberculoid

*History:* Suffered from leprosy for 2 years. Hypopigmented macular lesion on the trunk, of large size, expanded with anesthesia. Similar lesion on left cheek, but smaller. He has been treated with DDS by mobile clinic for one year.

*Skin lesion:* Flat elevated brown-colored papules up to finger-tip-size are distributed all over the body surface.

*Reactional stage:* 2 months ago, lesions became reddish with fever, and new papules and plaques appeared on all over the body. Because of this he was hospitalized.

*Treatment:* DDS 100 mg for 1 year. Regular treatment.

*Laboratory finding:* Bacterial index: 0.75; Hb 10.0 gm%; R. B. C. 3.90 million cells/cu. mm.; Diff. Count: N 62%, L 38%.

*Histopathology finding:* Monocytes and epithelioid cells and fibrinous exsudate in the upper corium. One giant cell of Langhans type can be seen. Dissolution of blood vessels can be seen in the reticular layer. Capillaries of papillary layer dilated. Haemorrhage in the tissue. No foamy structure.

**Case No. 19 (Photo 9)**

Age: 35 Sex: Male Nationality: Thai Race: Thai

Religion: Buddhist Type: Reactional tuberculoid (papular form)

*History:* 20 years ago there was a macular lesion on knee, which was anesthetic and unchanging. It was treated with chaulmoogra oil for 4 years.

*Skin lesion:* Small (5-8 mm) flat papular lesions on all over the body surface.

*Reactional stage:* Since 2 weeks ago, papular lesions of pea-size appeared on the trunk and extremities.

*Treatment:* Chaulmoogra oil for 4 years and later no treatment for 10 years. Then started DDS treatment and continued it for 4 years and stopped again until 2 weeks ago when reaction started. He tried to have treatment again.

*Laboratory finding:* Bacterial index: 0.5; Hb. 11.2 gm%; R. B. C. 4.74 million cells/cu. mm.; W.B.C. 4200 cells/cu. mm.; Diff. Count: N 69%, L 30%, E 1%.

*Histopathology finding:* Focal lesions composed of cells with round nucleus and transparent cytoplasm (artifact, may be monocyte?). Also epithelioid cell formation is seen in many foci.

## E. Tuberculoid in Reaction

### Case No. 1 (Photo 10)

Age: 24      Sex: Male      Nationality: Thai

Race: Chinese      Religion: Buddhist      Type: Tuberculoid in reaction

*History:* He has been suffering from leprosy for 2 years. First lesions appeared as maculo-anesthetic on face and then changed to elevated, reddish lesions on extremities and body trunk. Accompanied with intrinsic muscle atrophy of hands. He had no DDS treatment before admission (Nov, 10, 1964).

*Reactional stage:* From the day of admission till one month later, he got reaction with fever and headache. Reactional lesions consist of annular lesions of irregular shape with scaling.

*Treatment:* INH during reaction 300 mg/day. DDS 25 mg/day.

*Laboratory finding:* Bacterial index: 1.2; Skin scrape for fungus: negative; Hb 12.0 gm%; R.B.C. 23 million cells/cu. mm.; W.B.C. 4900 cells/cu. mm.; Diff. Count: N 64%, L 35%, E 1%; Urine: Sp. Gr. 1.010, Epithelial cells few, Hyaline casts very few; Feces: nil; Others: nil.

*Histopathology finding:* Compact epithelioid-cell tubercles occupy the whole corium. Subepidermal collagenous layer free from cells rather broad. No giant cells found. Here and there vacuolated epithelioid cells with small number of bacilli are found. Acid-fastness decreased due to improper conditions during fixation.

## F. Borderline

### Case No. 3 (Photo 11)

Age: 39      Sex: Male      Nationality: Thai      Race: Thai

Religion: Buddhist      Type: Borderline ?

*History:* He has been suffering from leprosy for 3 years. First lesion on the right hand was anesthetic. About 6 months later, lesions became erythematous. Area of anesthesia appeared on lower extremities. He was admitted on Sept. 17, 1964.

*Skin lesion:* Brown atrophic patch on right upper arm.

*Reactional stage:* 3 months before admission, he started erythema of acute onset although he did not get any treatment. At that time, he could not walk with fever and headache. After treated for reaction for 3 months, lesions subsided and he was discharged for ambulatory treatment.

*Treatment:* No treatment before admission. INH during reaction 300 mg/day.

*Laboratory finding:* Bacterial index 0.3; Hb 13.8 mg%; R. B. C. 4.48 million cells/cu. mm.; W. B. C. 9450 cells/cu. mm.; Diff. Count: N 66%, L 32%, E 2%; Urine: Sp. Gr. 1.008, Epithelial cells few, Hyaline cast few; Feces: nil; Others: nil.

*Histopathology finding:* Epidermis flattened. No rete ridges. In the upper corium

diffuse infiltration of young fibroblasts. In deeper layer of the corium, round cell infiltration. Capillaries in reticular layer dilated. No large foamy cells except very small vesicles in infiltrating cells of the upper corium. It seems that the original (foamy) tissues are now being destroyed and being replaced by infiltrating fibroblasts. Unusual histology.

**Case No. 6 (Photo 12)**

Age: 24 Sex: Male Nationality: Thai

Race: Thai Religion: Buddhist

Type: Borderline. Perhaps reaction in tuberculoid, changing to lepromatous.

*History*: He has been suffering from leprosy for 9 years. Admission on Oct. 28, 1964. No treatment with DDS before admission. No history of leprosy among his relatives. First lesion on the little finger of the left hand was anesthetic. The rest of fingers atrophied. Later erythematous lesions appeared all over the body with local edema of feet.

*Skin lesions*: Lesions of borderline or lepromatous nature on his face. Verrucous annular lesion on his shoulder and lower extremities. Early lesion of lepromatous nature on left cheek.

*Reactional stage*: Since 2 months after admission he has been suffering from reaction.

*Treatment*: Treatment with INH since Oct. 28, 1964. No treatment with DDS.

*Laboratory finding*: Bacterial index 2.0; Hb 7.2 gm%; R. B. C. 3.45 million cells/cu. mm.; W. B. C. 10600 cells/cu. mm.; Diff. Count: N 63%, L 35%, E 1%, M 1%; Urine: Sp. Gr. 1.007; Feces: nil; Others: nil.

*Histopathology finding*: Rather diffuse cell infiltration in the corium. Also here and there fibrosis. The whole corium shows shrunken appearance.

**G. Lepromatous Exacerbation**

**Case No. 21 (Photo 13)**

Age: 34 Sex: Male Nationality: Thai Race: Thai

Religion: Buddhist Type: Lepromatous (annular lepromatous lesion)

*History*: He has been suffering with macular lesions for a period of about 16 years. After 2 years (14 years ago) he has been treated with sulfone derivative for 4 years, and the lesions subsided. So he stopped the treatment for 6 years, and during that time there was no lesion at all.

*Skin lesion*: Annular elevated lesion on the back and nearly annular elevated infiltrative lesion on the abdomen. Surface of the lesion is a little wrinkled.

*Reactional stage*: 4 months ago, there appeared new acute elevated lesions of purplish color on the back and abdomen.

*Treatment*: DDS for 4 years, and no treatment for 6 years.

*Laboratory finding*: Bacterial index: 2.75; Hb. 11.4 gm%; R.B.C. 4.11 million/cu. mm.; W.B.C. 5150 cells/cu. mm.; Diff. Count: N 68%, L 31%, E 1%.

*Histopathology*: Epidermis is extended. No rete ridges. Whole corium has changed into a big mass of lepromatous lesion. Many giant globi can be seen. Many foci of round cell infiltration in this tissue.

## H. DDS Dermatitis

### Case No. 27 (Photo 14)

Age: 19      Sex: Male      Nationality: Thai      Race: Thai

Religion: Buddhist      Type: DDS dermatitis superimposed on lepromatous lesion.

*History*: He has been suffering from leprosy for 5 years. First lesions were macular, hypopigmented and various sized with borders showing signs of activeness (reddish and elevated). After admission (4 years ago) the lesions became hyperpigmented.

*Skin lesion*: Old lepromatous infiltration with the appearance of chronic dermatitis or eczema.

*Reactional stage*: 4-5 months ago, the lesion spread to all over the body. The present lesions are shiny and show the appearance of dermatitis or eczemization and secondary infection. According to the history, the reaction appeared several times during last four years, usually after taking DDS tablets.

*Treatment*: DDS treatment

*Laboratory finding*: Bacterial index 1.62; Hb. 11.8 gm%; R. B. C. 3.94 million cells/cu. mm. W.B.C. 5350 cells/cu. mm.; Diff. Count: N 68%, L 31%, E 1%.

*Histopathology finding*: Lymphocytic infiltration in lepromatous foci of the reticular layer and deep corium.

## DISCUSSION

Although the histopathological features of reactional cases of leprosy in Thailand did not differ very much from those observed in Japan, some of the clinical pictures of reactional cases were a little different in both countries.

Most of the ENL cases presented the same clinical pictures, but sometimes (Case No. 22) erythema multiform has shown the appearance of depigmented irregular patches in patients rich in pigment.

According to our quite limited number of observations, erythema nodosum necroticans with tendency of keloid formation seemed to occur more frequently among young female chinese patients. Histopathologically impregnation of fibrin in inflammatory tissues was impressing.

Papular lesions of reactional tuberculoid leprosy are also available in Japan, but

they are usually more erythematous in Japan. Those of Cases No. 14, 15 and 19 resemble rather dissemination of lepromatous papules in lepromatous exacerbation as they are less erythematous. Actually we could not decide the diagnosis at the time of biopsy in Leprosarium. The true nature of these lesions could be elucidated clearly only after the histopathological and bacteriological examinations. We were impressed by the importance of histopathological diagnosis even in mass treatment of leprosy cases by mobile clinic.

The clinical picture of "Tuberculoid in reaction" as observed in Case No.1 was not so different from those seen in Japan.

Borderline cases of Cases No. 3 and 6 was very rare types of leprosy lesions. Especially Case No.6 was so interesting that we were a little at a loss to diagnose this case into any types of leprosy. Temporarily we classified this case as borderline as it has very ambiguous clinical features resembling tuberculoid as well as lepromatous. But its clinical picture is quite different from ordinary borderline leprosy.

Lepromatous exacerbations in the form of annular lesion are also observed in Japan. The histopathology of Case No. 21 was typical lepromatous and there were no signs of tuberculoid leprosy, although clinically it resembled tuberculoid leprosy a little bit.

Case No. 27 was a case of dermatitis or eczematization superimposed on diffusely infiltrated lepromatous skin. The dermatitis seemed to be related to DDS treatment, though we could not prove it definitely.

## SUMMARY

1) Clinical and histopathological pictures of 24 cases of reactional phases of leprosy observed in Prapradaeng Leprosarium and Khon Kaen Leprosarium are described.

2) The differences of clinical pictures of reactional phases of leprosy in Thailand and in Japan are discussed briefly.

## ACKNOWLEDGMENTS

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Photo. 1 ↑

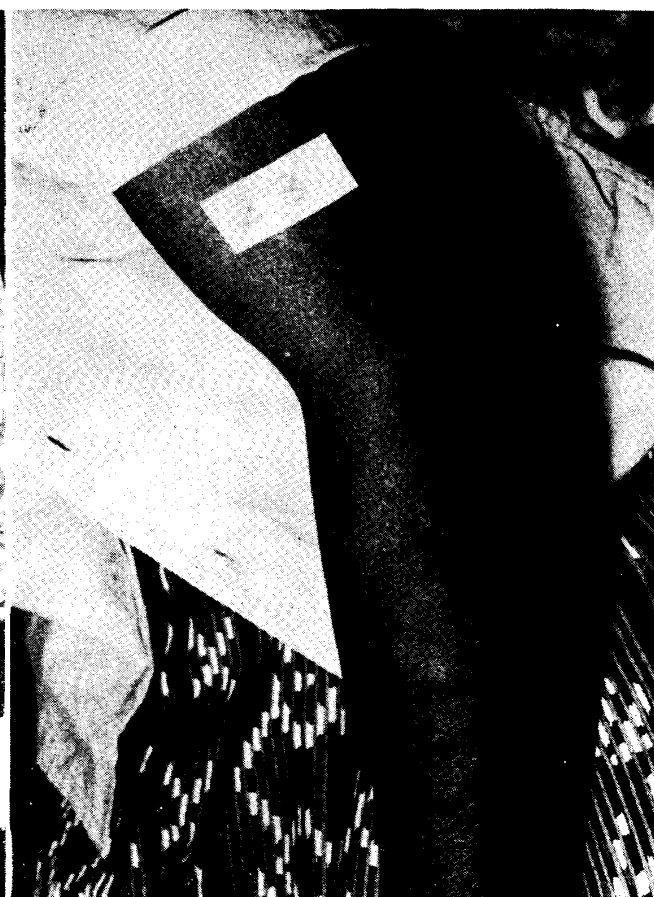


Photo. 2 ↑

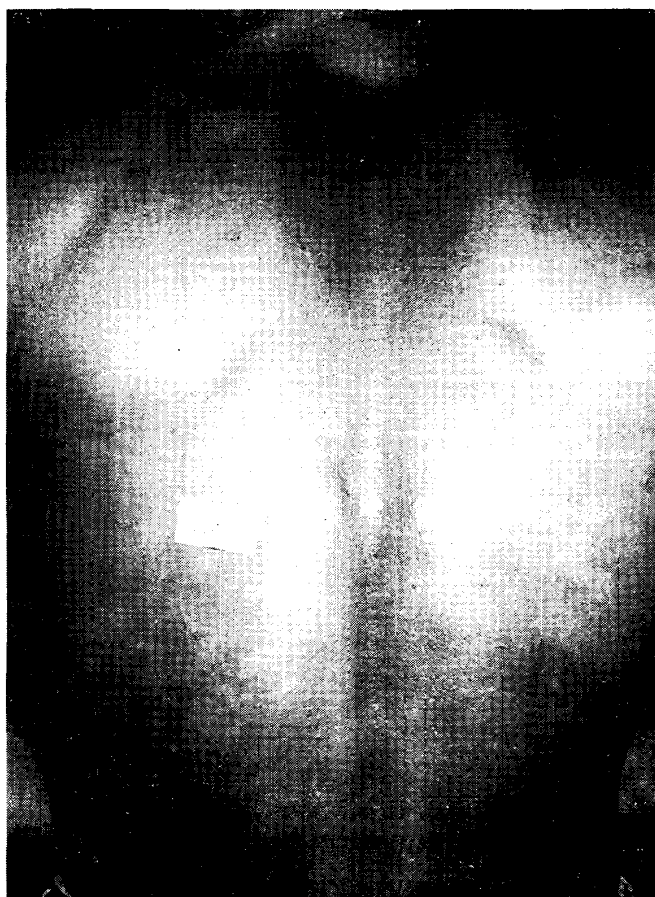


Photo. 3 ↓



Photo. 4 ↓





Photo. 5 ↑

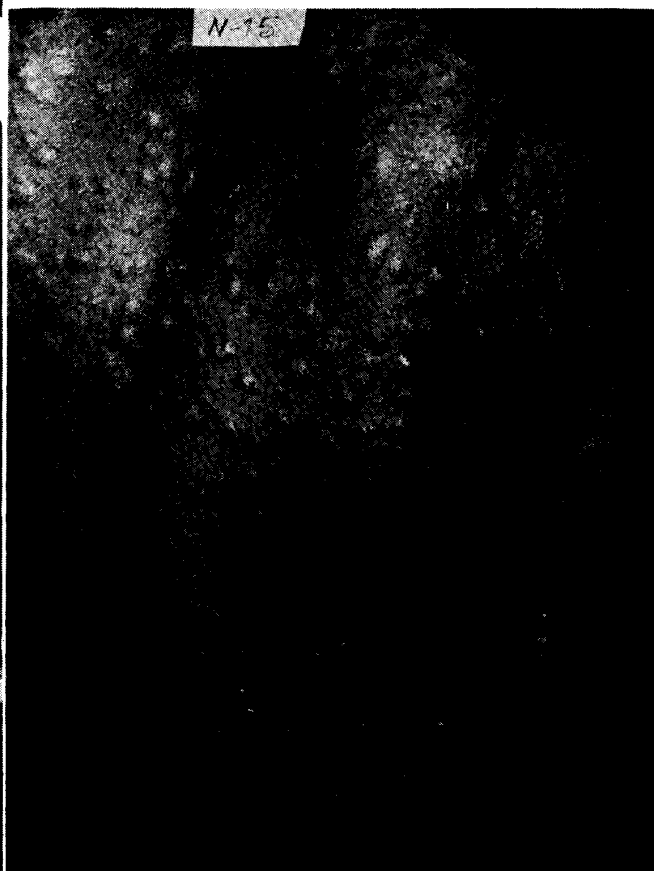


Photo. 7 ↑

Photo. 8 ↓



Photo. 6 ↓





← Photo. 9



Photo. 11 ↑



Photo. 10 ↓



Photo. 12 →

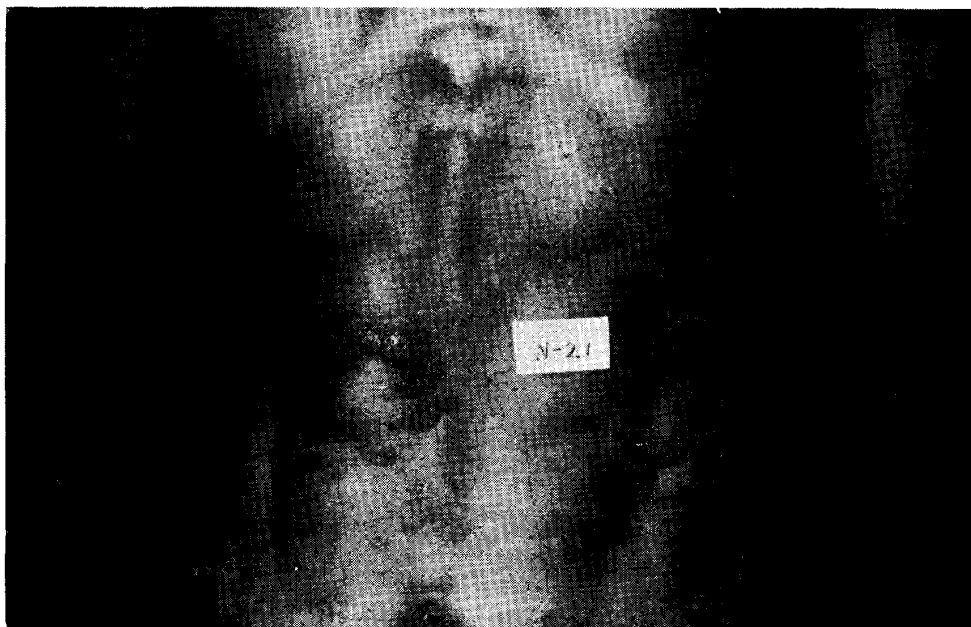


Photo. 13 ↑



Photo. 14 →